ROLL NO. _____

Code: DE70/DC56 Subject: OBJECT ORIENTED PROGRAMMING WITH C++

DIPIETE – ET/CS

Time: 3 Hours **JUNE 2014** **Max. Marks: 100**

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or the best alternative in the following: (2×10)

a. Identify the correct statement with respect to *for* loop

(A) A *for* loop is executed at least once.
(B) The body of the loop is executed only if the condition mentioned is false.
(C) The condition is checked first, followed by initialization.
(D) A *break* statement can be used to stop the execution of the *for* loop.

b. Which of the following statement is false?

(A) A function can be defined in the body of another function.
(B) A *while* loop can be nested in a *for* loop.
(C) An *if* statement can be written in a *do-while* loop.
(D) A *switch* statement can be written in a function.

c. _____ operator is used to access the value pointed to by a pointer variable.

(A) / **(B)** &
(C) # **(D)** *

d. Which of the following declaration is correctly defining default parameters?

(A) void fn(int i, char c = 'a', float f);
(B) int fn(int i = 10, char c, float f);
(C) int fn(int i, char c, float f = 12.3);
(D) int fn(int i = 10, char c, float f = 12.3);

e. The operator that cannot be overloaded is

(A) [ ] **(B)** ?:
(C) + **(D)** ++

f. Given that a class named *Student* has been already defined. Which function will be invoked for the following statement?

```
Student s;
```

(A) A destructor
(B) A static function
(C) A constructor
(D) A friend function

g. Identify the correct statement for the code segment given below:

```
class B : protected A { … }
```

(A) All the private, public and protected members of A become protected members of B.
(B) All the public and protected members of A become private members of B.
(C) All the public and protected members of A become public members of B.
(D) All the public and protected members of A become protected members of B.

h. A class having a _____ function is defined as an abstract class.

(A) virtual function
(B) pure virtual function
(C) overloaded function
(D) friend function

i. Which of the following code segment is an example of multiple inheritance?

(A)
```
class A { …};
class B { … };
class C : public A, private B
```
(B)
```
class A { …};
class C : public A
```
(C)
```
class A { …};
class B : protected A { … };
class C : public B { … };
```
(D) None of these

j. Which of the following manipulator is used to set the width of the output?

(A) setw()
(B) endl
(C) setfill()
(D) setprecision()

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. Explain the three important features of object-oriented programming. **(6)**

b. Write a program to display the multiplication table of the number entered by the user. **(6)**

c. Compare *while* and *do…while* loops, with the help of example. **(4)**

Q.3 a. Define array. Give the general syntax for declaring an array. How we initialize an array at compile time? **(2+2+3)**

b. Define a structure of Employee with the following fields: empNo, name and salary. Write a program to read and store the data of at most 10 employees in an array. Also display the average salary of the employees. **(9)**

Q.4 Write short notes on the following (any **FOUR**):
(i) class & objects
(ii) friend functions
(iii) passing parameters to a function by reference
(iv) static data members
(v) access modifiers **(4×4)**

Q.5 a. Define a class *Complex* having a real part and an imaginary part. Include the following functions in the class:
- A constructor to initialize the values of the members to 0
- A function to initialize the data members of the class
- Overload + operator to add two complex numbers
- A function to display a complex number **(10)**

b. What is a destructor? What are its properties? **(6)**

Q.6 a. What is multiple level inheritance? What will be the calling sequence for constructors and destructors for the following class definitions:

```
class A{ … };
class B : public A { … };
class C: protected B { … };
```

(8)

b. What are virtual inheritance? Why is it required? **(8)**

Q.7 a. What are abstract classes? How can a class be made abstract? Give example. **(8)**

b. Explain *try..catch* and *throw* constructs with the help of an example. **(8)**

Q.8 a. What are templates and what is their use? Explain. **(8)**

b. Write a program to find the minimum of two values using templates. In main(), write calls to display its use on different data types. **(8)**

Q.9 a. Write a program to display the contents of file on the screen. **(8)**

b. With the help of examples, explain the use of the following flags in the *ios* class:
(i) scientific (ii) boolalpha
(iii) right (iv) showpos **(8)**